OXO - 2489
Copy__of 5

23 October 1961

MEMORANDUM FOR : Chief, Development Branch, DPD-DD/P

SUBJECT : Design Safety Factor [redacted] 25X1A

1. Current Air Force design criteria as outlined in AFM 86-4, "Standard Installation Facilities Requirements", provide for the following safety factors in runway length, based on flight manual take-off rolls and annual average maximum temperatures:

Type Aircraft	Runway Length Safety Factor
Fighter-Interceptor, Fighter-Bomber and Light Bomber	1.75
Medium Bomber	1.15, min. Length of runway - 9,000 ft.
Heavy Bomber	1.2, min. Length of runway - 10,000 ft.
Pilot Training	2.0

Slush or puddled water on runway adds approximately 27 percent to the take-off roll.

2. LAC report SP-237, Aerodynamic Status Report No. 2 (Performance), dated 1 January 1961, provides information for predicting take-off rolls and safety factors for 4,500 feet field elevation, 8,654 feet runway length and a take-off gross weight of 117,000 pounds. The annual average maximum temperature [redacted] based on a survey by the DPD Weather Staff is 80°F, resulting in a take-off roll of 8,100 feet and a runway length safety factor of 1.07. To meet minimum Air Force safety standards, if the A-12 is to be considered in the medium bomber class (a reasonable assumption), the runway would have to be 9,320 feet long. If the A-12 is considered as any other type, the runway length requirements will be increased accordingly. 25X1A

25X1A

3. During the months of June, July and August the average maximum temperature [redacted] is 99°F. The take-off roll under similar conditions as above is 8,690 feet, which is in excess of the length of the present runway. A runway 10,000 feet long would be required to provide a 1.15 safety factor during this period.

4. The TOGW of 117,000 pounds shown in SP-237 is based on total engine weight of 11,514 pounds. If there is an increase in TOGW as a result of recent increases in predicted engine weight, further increases in take-off roll will occur.

25X1A

[redacted]

6. It is considered that much of the performance testing will require take-off at maximum gross weight to insure validity. The availability of an adequate safe runway is essential to conduct of test operations. The present runway does not meet minimum Air Force safety requirements and on critical days will not even be adequate for the take-off roll. In the event of an aircraft accident wherein inadequate runway length could possibly be a contributing factor, such inadequacy will undoubtedly be brought out and attributed to supervisory error. It is therefore recommended that the present runway be extended to a minimum length of 10,400 feet. This will provide a safety factor of 1.2 on a 99°F day and eliminate restrictions on test operations at a TOGW of 117,000 pounds. It will also provide a safety factor of 1.24 on an 80°F day at 119,000 pounds or a safety factor of 1.15 on a 99°F day at 119,000 pounds. The 119,000 pounds TOGW is quoted to account for increases in predicted engine weight.

25X1A

[redacted]

Distribution:
1-C/DE/DFD
2-C/STD/DTD
3-ACH/DEO
4-CB/DFD
5-RI/DFD
DFD/DB/[redacted]:rcw

25X1A